

CLAIMS

1. A method of operation for an air conditioning system of a motor vehicle including a refrigerant compressor, a driver-manipulated switch for enabling and disabling air conditioning, an evaporator for cooling inlet air when air conditioning is enabled, a temperature control mechanism positioned to control re-heating of air exiting the evaporator, and a driver-manipulated temperature selector, the method comprising the steps of:

defining a first control schedule of temperature control mechanism position and compressor capacity for producing a discharge air temperature corresponding to a setting of said temperature selector;

defining a second control schedule of temperature control mechanism position for producing discharge air heating in relation to the setting of said temperature selector;

regulating the compressor capacity and the temperature control mechanism position in accordance with said first control schedule when air conditioning is enabled; and

regulating the temperature control mechanism position in accordance with said second control schedule when air conditioning is disabled.

2. The method of operation of Claim 1, wherein the compressor capacity of said first control schedule is defined in terms of a desired temperature of the exiting said evaporator, and the step of regulating the compressor capacity involves regulating the compressor capacity so that the air exiting said evaporator achieves said desired temperature.

3. The method of operation of Claim 1, including the steps of:

defining entry conditions for regulating the compressor capacity and the temperature control mechanism position in accordance with said first control schedule; and

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5 regulating the temperature control mechanism position in accordance with said second control schedule and the compressor capacity in accordance with a nominal control setting when said entry conditions are not met.

4. The method of operation of Claim 3, wherein said entry conditions include detecting an ambient temperature in excess of a reference temperature, activation of said driver-manipulated switch for enabling air conditioning, and driver selection of an airflow mode for cooling the vehicle.

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5. A method of operation for an air conditioning system of a motor vehicle including a refrigerant compressor, a driver-manipulated switch for enabling and disabling air conditioning, an evaporator for cooling inlet air when air conditioning is enabled, a temperature control mechanism positioned to control re-heating of air exiting the evaporator, and a driver-manipulated temperature selector, the method comprising the steps of:

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defining a first control schedule of temperature control mechanism position and compressor capacity for producing a discharge air temperature corresponding to a setting of said temperature selector;

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defining a second control schedule of temperature control mechanism position for producing discharge air heating in relation to the setting of said temperature selector;

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regulating the temperature control mechanism position in accordance with said second control schedule and the compressor capacity in accordance with a minimum control setting to rapidly cool the vehicle when air conditioning is initially enabled; and

regulating the compressor capacity and the temperature control mechanism position in accordance with said first control schedule when said system has achieved substantially full cooling capacity.

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6. The method of operation of Claim 5, including the step of:
- detecting that said system has achieved substantially full cooling capacity when a low side temperature or pressure of said system has been reduced below a threshold value.

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7. The method of operation of Claim 5, including the step of:
regulating the temperature control mechanism position in accordance with said second control schedule when air conditioning is disabled.

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